ARTIFICIAL LIGHT

The exact nature of light, the source of all plant energy, is debatable, but physicists are able to give us much information by measuring physical properties such as light speed, energy, content, and quality of color.

On a bright day, the sun appears to an average person as a brilliant blaze giving off a combination of orange, yellow, and red rays. Actually its visible rays are of various colors and lengths, the shortest being violet and the longest red.

If you hold a prism so that light strikes it, you will see this multi-colored band on white paper placed below. As light passes through the prism, it separates into a spectrum – a rainbow of violet, indigo, blue, green, yellow, orange, and red.

The leaves of plants are green because green is the color in light that is reflected by them and therefore apparent to us. Most of the other spectrum colors are absorbed by plant pigment. The energy from this absorbed light activates leaf "factories". Red and blue colors in light are more efficient carriers of energy, and certain light-induced phenomena in plants react more favorable to them. Red color rays promote good root and flower development, and blue color rays promote good stem and leaf development. A HEALTHY PLANT NEEDS A GOOD COMBINATION OF BOTH RED AND BLUE RAYS.

Many types of artificial light have been used to influence plant growth, but those most successful are the incandescent and fluorescent. In incandescent light, produced by the familiar electric light bulb, illumination comes from heating a tungesten filament by electricity. INCANDESCENT BULBS EMIT MORE RED RAYS THAN BLUE ONES, and as plants need a proper balance of blue and red light for good plant growth and flowering, incandescents are satisfactory, but not as good as fluorescent light.

Fluorescent light is produced by a tubular electric lamp, coated on the inner surface with phosphor or a phosphorescent substance. The tube contains a blend of argon and nitrogen gases, and a small drop of mercury, which, when hit by electrons, causes the phosphor to emit visible light. WHITE fluorescent lamps are clsssified as dèluxe white, warm white, white, soft white, deluxe cool white, and cool white. WHEN APPLIED TO WHITE FLUORESCENTS, WARM OR COOL DOES NOT REFER TO THE HEAT OUTPUT BUT TO THE DEGREE OF RED COLORING IN THEIR MAKEUP. Therefore, warm fluorescent light sheds more red rays than cool fluorescent. On the other hand, DAYLIGHT fluorescent lamps abound in blue light, and also shed some red rays.

While plants absorb light largely from the red-orange portion of the spectrum, they obtain over-all perfection when receiving both red and blue rays.

This is why commercial plant growing bulbs are actually the best for indoor crops, for they are wide spectrum lamps. Of all the different kinds, I recommend GRO-LUX by Sylvania. These can be purchased at most department stores in 15, 20, or 40-watt sizes for about $2.50 each, and fit standard fluorescent fixtures. Also available are NATUR-ESCENT tubes, whose color spectrum very nearly resembles the sun. However, they cost a little extra, and are not always available at the local department store. They may be ordered from the Edmund Scientific Co., Barrington, New Jersey 08007. They cost $13.00 per set of four and come in the following sizes: 15 watt, 18 inches long, stock number P-71, 151; 20 watt, 24 inches long, stock number P-71, 152; and 40 watt, 48 inches long, stock number P-80, 124. Because the price of the tube is the same, it is better to order the largest size if you have the appropriate fixtures.

Growing marihuana under artificial light presents a couple of problems:

1. *LIGHT DIFFUSION*
2. *HEAT*